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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/780,865	02/19/2004	Kyoung-Mi Kim	SEC.1139	1956

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EXAMINER

ZIMMER, MARC S

ART UNIT	PAPER NUMBER
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1712

DATE MAILED: 05/31/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/780,865

Applicant(s)

KIM ET AL.

Examiner

Marc S. Zimmer

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4 and 7-9 is/are rejected.
- 7) ☒ Claim(s) 1-9 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 12/27/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

Claim Objections

Claims 1 to 9 are objected for their poor representation of the monomer. In particular, formula (1) should be redrawn wherever it appears so as to bring the residues constituting the monomer closer together.

Claims 1-9 are objected to because, technically speaking, the backbone provided by polyhydrosilylation of the monomer (1) is a silalkylene-siloxane. Therefore, "silicone" and "siloxane" are not proper characterizations of the surfactant and its backbone

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1, 3-4 and 7-9 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps. See MPEP § 2172.01. Each of independent claims 1, 3, 8, and 9 are directed to a method of making/method of using a hyperbranched polymer surfactant wherein it is understood that the polymer will necessarily contain a hydrophobic component and a hydrophilic component. However, in none of these claims is there provided a step that will provide a hydrophilic component/moiety. For instance, claim 1 states that the polymer surfactant is prepared by polymerizing the monomer of formula (1). The resulting product, a branched siloxane-silalkylene copolymer features a hydrophobic component but there is no source of hydrophilicity. The only hydrophilic groups contemplated by Applicant's Specification are carboxyl groups hence a step that results in the introduction of these groups should be expressly recited in claims 1, 3, 8, and 9.

Claims 1-4 and 7-9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Applicant states that the hyperbranched polymer is prepared by "polymerizing" the monomer (1) but the Examiner can conceive of two different ways that a hyperbranched polymer might be obtained. The first, of course, is polyaddition/polyhydrosilylation which is the polymerization approach disclosed by the Specification. The other is free radical polymerization of the plurality of vinyl groups in monomer (1). Reaction of both groups with different free radical sources, i.e. free radicals contributed by different growing polymer chains will inherently lead to a substantially branched polymer. Applicant should clarify the polymerization method by stating precisely what it entails.

Any solution Applicant deems necessary to address the issues raised herein should be replicated in the Specification.

Claims 1-9 would be allowable if rewritten or amended to overcome the various objections and rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action.

While hyperbranched polymers prepared using similar methodology have been reported, there is no documentation of a hyperbranched having been prepared from a compound equivalent to monomer (1). Indeed, in most instances, the starting materials used have been bis- and tris(diorganosiloxy)silanes wherein the central silicon atom has

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bonded to it a single ethylenically-unsaturated group. See, for example, Schemes 1 and 2 in the article entitled "New Hyperbranched Poly(siloxsilanes): Variation of the Branching Pattern and End-Functionalization authored by Frechet et al. and published in *Macromolecules*, 1998, 31, 3461-68.

Takiuchi et al., U.S. Patent # 6,307,081 discloses an AB₂-type organosilicon monomer that, in one embodiment, features two alkenyl moieties and one hydrosilyl group. See columns 7 and 8 for a description. However, the monomer is not a disiloxane but, rather, a siloxane oligomer wherein the alkenyl- and hydrido-bearing silicon atoms are separated by several siloxane repeat units.

In any case, the references teaching similar hyperbranched polymers do not contemplate their subsequent modification to introduce a hydrophilic group.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marc S. Zimmer whose telephone number is 571-272-1096. The examiner can normally be reached on Monday-Friday 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on 571-272-1302. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

May 25, 2005

Mark Zimmer
Mark Zimmer
AU 1712